DOCUMENT RESUME

ED 173 661 CE 022 385

TITLE A Survey of the Employment and Performance of Non-Traditionally Trained Teachers of Agriculture and Trade and Industry Education. Final Report.

INSTITUTION New York State Education Dept., Albany. Bureau of Occupational Education Research.

PUB DATE Jan 78

NOTE 55p.

EDRS PRICE MF01/PC03 Plus Postage.

DESCRIPTORS *Agricultural Education; Employment Qualifications; *Special Programs; *Teacher Certification; *Teacher Characteristics; Teacher Education; Teacher Evaluation; Teaching Quality; *Trade and Industrial Education; *Vocational Education Teachers; Work Experience

IDENTIFIERS *New York

ABSTRACT

The purpose of this study was to ascertain the effect of a 1972 change in New York certification requirements for vocational education teachers which made it possible for individuals with minimal work experience to become certified to teach vocational subjects. To determine the effect of these changes on local schools, this study attempted to determine the extent of hiring of trade and industry and agriculture teachers under the revised regulations and to assess the performance of those teachers, as performance was perceived by supervisors. A survey form was developed and administered through interviews to the supervisors of those individuals initially entering teaching with nontraditional preparation and no previous teaching experience. The only significant differences found were that traditionally prepared teachers, as a group, were somewhat older than non-traditionally prepared teachers and had more experience both in their teaching field and in related fields. Supervisors perceived non-traditionally prepared teachers as being positive on most variables but believed improvements could be made in classroom management and human relations skills. (Teacher certification requirements and the survey form are appended.)
(LRA)

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A SURVEY OF THE EMPLOYMENT AND PERFORMANCE OF NON-TRADITIONALLY TRAINED TEACHERS OF AGRICULTURE AND TRADE AND INDUSTRY EDUCATION

FINAL REPORT

January 1978

Bureau of Occupational Education Research
NEW YORK STATE EDUCATION DEPARTMENT
Washington Avenue
Albany, New York 12234

CE022385

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A SURVEY OF THE EMPLOYMENT AND PERFORMANCE OF NON-TRADITIONALLY TRAINED TEACHERS OF AGRICULTURE AND TRADE AND INDUSTRY EDUCATION

Abstract

In 1972 a change in the New York State Regulations of the Commissioner of Education covering certification requirements for vocational education teachers made it possible for individuals with minimal work experience to become certified to teach vocational subjects. To ascertain the effect of these changes on local schools, this study attempted to determine the extent of hiring of trade and industry and agriculture teachers under the revised regulations and to assess the performance of those teachers, as performance was perceived by supervisors. The population studied consisted of trade and industry and agriculture teachers with five years or less of teaching experience.

With the changes in certification requirements, a number of recently certified agricultural teachers may have had little formal training, may not have a baccalaureate degree, and may have had work experience only in a limited number of agricultural occupations. Concurrently, newly hired T & I teachers may enter the field with considerable college credit or with college degrees, but with less trade experience than formerly was required for certification.

A survey form was developed to determine supervisors' perceptions of the effectiveness of individuals initially entering teaching with non-traditional preparation for certification who had no previous teaching experience. The survey form consisted of: 1) a structured listing of twenty-five specific teacher performance variables; and 2) an unstructured set of questions designed for open-ended response by supervisors. The extent of hiring non-traditionally trained teachers in New York State was determined through analysis of data obtained through the Education Department's Basic Educational Data System (BEDS).

The survey instrument was administered by personal interview or by telephone interview of the supervisor of each of the non-traditionally prepared teacher subjects. To insure statewide representation in the field visit phase, teachers were sorted by the type of school and by geographic region.

Responses to questions on the structured portion of the survey were identified as either positive or negative. Positive and negative responses were sorted and analyzed by occupational area, by curricular area, by course title, and by teacher performance category. The teacher performance categories examined were classified as classroom management, human relations, operative techniques and professional development. The t-test for significant differences between proportions was applied.

The analysis of responses to the unstructured portion of the survey involved categorization of responses, identification of consensus statements, and recording of individual supervisors' observations. Since the responses to the unstructured portion of the survey were largely subjective no statistical analysis of these findings was attempted.

Findings

In an analysis of personal and professional characteristics of both traditionally and non-traditionally prepared teachers, it was found that only 10 agricultural, 10 technical and 73 T & I teachers teaching in the Fall of 1976 fitted the selection criterion of five years or less of total teaching experience. None of the teachers identified had entered teaching after having met only the minimum requirements of four years post-secondary education plus one full or cumulative part-time year of work experience. All teachers reported substantial amounts of preteaching work experience in their T & I or agriculture teaching field.

It was found that traditionally prepared teachers, as a group, were somewhat older than were non-traditionally prepared teachers and had more experience both in their teaching field and in related fields. No other significant differences between traditionally and non-traditionally trained teacher groups were found on the variables examined. Vocational teachers who entered teaching with non-traditional preparation frequently were those who had obtained a college degree in a non-vocational area and who, prior to teaching, had worked in their trade or other teaching field.

Supervisors perceived non-traditionally prepared teachers as being overwhelmingly positive on most of the variables examined. However, supervisors perceived that the teachers studied who were teaching some of the vocational subjects could improve in classroom management and human relations skills.

In general supervisors indicated that they believed a baccalaureate degree plus a minimum of two years full-time trade experience to be essential for teaching vocational, technical or agriculture subjects and that personality characteristics of teachers are at least as important as is their professional preparation.

Supervisors indicated a need for upgrading or inservice courses in the following areas: 1) developing behavioral objectives, 2) classroom management, 3) modularizing curriculum, 4) psychology of motivation, 5) technical writing, and 6) educational methodology. Additional work shops or courses should aid teachers in working more effectively with guidance personnel and local community groups.

FOREWORD

In 1972 a change in the certification requirements for vocational education teachers made it possible to become certified with minimal trade experience. To ascertain the effect of these changes in local schools an attempt was made, in this study, to determine the extent of hiring of trade and industry and agriculture teachers under the revised regulations and to assess the performance of those teachers, as performance was perceived by supervisors.

The results of the study tend to show that supervisors regard substantial vocational experience to be an essential prerequisite for entry into teaching. No teacher was found who met only the minimum certification experience requirement. In general, the individuals surveyed were considered to perform well as teachers, although some groups of teachers could improve their skills in specific categories.

The study was conducted by Lane R. Van Orman and Dorothy H. King, Bureau of Occupational Education Research, the New York State Education Department. The results reported in this study are expected to be of value to persons interested in teacher certification, teacher training or the employment of vocational teachers.

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I. INTRODUCTION

Recent changes in secondary level teacher certification requirements have encouraged individuals with non-traditional preparation to seek employment as teachers of agriculture or of trade and industry (T & I) subjects.

By definition, traditionally trained teachers of agriculture are those who received their career preparation at four-year colleges of agriculture. T & I teachers, on the other hand, traditionally have had extensive experience working in their field and generally have not had baccalaureate degrees. However, in 1971-72, changes in the Regulations of the Commissioner of Education governing the issuance of certificates for teaching occupational subjects made possible the certification as teachers of persons with other than traditional training and experience.[1] For the purposes of this study, these persons are defined as being non-traditionally prepared. A copy of the regulations governing certification requirements may be found in Appendix A.

With the changes in certification requirements, a number of newly eligible agricultural teachers may have had little formal training, may not have a baccalaureate degree, and may have had work experience only in a limited number of agricultural occupations. Concurrently, newly hired T & I teachers may enter the field with some college credit or with college degrees, but with less trade experience than formerly was required for certification.

Statement of the Problem. The non-traditional approach to certification is considered by some vocational educators in New York State to be a controversial matter. Thus, the problem proposed for this study was to determine the effect of changes in certification requirements on teacher employment practices and on the quality of the performance of non-traditionally certified teachers, as that quality was perceived by supervisors of teachers in the study.

Purpose of the Study. The purposes of the study were: 1) to determine the extent of hiring of non-traditionally prepared teachers in the fields of agriculture and trade and industry education in New York State; and 2) to assess the overall performance of non-traditionally trained teachers with five years or less of teaching experience as perceived by supervisors. Expected products of the study were: 1) an analysis of the work experience and educational backgrounds of non-traditionally certified teachers with five years or less of teaching experience; and 2) a summary description of supervisors' opinions of non-traditionally prepared teacher performance. It was anticipated that the survey findings would provide the basis for pre-service and inservice training and would contribute to the continuous review of teacher certification requirements by the State Education Department.

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[1] The State Education Department, PART 80, Teachers Certificates, Amendments to Regulations of the Commissioner of Education Pursuant to Section 207 of the Education Law. New York State. 1972.

II. METHODOLOGY

Teachers to be surveyed were identified through referral to the State Education Department's Basic Educational Data System (BEDS), which annually gathers demographic, training and experience data for all New York State teachers. Names and school district addresses of agricultural and T & I teachers with five years or less of experience in their assignment area, as of October 1976, were extracted from BEDS files. Concurrently, names and school addresses of individuals directly supervising the teachers to be surveyed also were extracted from the non-teaching professional staff data files. A teacher population of 730 individuals was identified. Table I shows the number of teachers in each occupational area and indicates that the majority of the teacher population (76%) taught trade and industry subjects.

TABLE I

TEACHERS WITH FIVE YEARS OR LESS EXPERIENCE IN ASSIGNMENT AREAS

Occupational Area	Number of Teachers
Trade & Industry	552
Technical	44
Agriculture	134
TOTAL	730

Demographic characteristics data for the teacher population were extracted from the BEDS printouts. The variables examined were current degree status, years in teaching, sex, and age.

A brief survey form was distributed to the previously identified teacher population to obtain information on the pre-teaching work experience and professional preparation of the subjects. Questionnaire returns provided data relating to years of pre-teaching experience in the teaching field, work experience in related fields, pre-teaching college degree levels, and major area of college study. Copies of all survey forms may be found in Appendix B.

Teacher Characteristics. A preliminary review of teacher survey responses indicated that a number of teachers had more than five years of total teaching experience, although BEDS data had indicated five years or less of experience in their current assignments (N=195). These teachers were eliminated from further consideration as not meeting the survey criterion for recent certification. During the field survey phase it was found that a number of other teachers also did not meet the experience

criterion (N=17). Seventy-three teachers sent either a non-usable response or no response, leaving a total population of 445 subjects. The number of teachers studied is shown in Table II, by certification route and by occupational area.

TABLE II

NUMBER OF TEACHERS, BY CERTIFICATION ROUTE AND BY OCCUPATIONAL AREA

		Occupational Area		
	Total	Trade and Industry	Technical	Agriculture
Traditional	352	278	5	69
Non-Traditional	93	73	10	10
TOTAL	445	351	15	79

In a second sorting of the data, teachers were categorized by occupational area (e.g., agriculture), and by pre-teaching professional preparation (i.e., no degree, associate, baccalaurate, graduate degree). Data on teacher characteristics were tabulated by type of preparation and by course title (e.g., automotive mechanics, conservation).

Teacher Performance. In order to determine supervisors' perceptions of the effectiveness of individuals entering teaching with non-traditional preparation for certification, a twenty-five item survey form (opinionaire) was developed, based on the work of Perkins (1975).[2] The survey form consisted of two parts: 1) a structured listing of twenty-five specific teacher performance variables; and 2) an unstructured set of questions designed for open-ended response by supervisors.

Major categories of performance measured by the structured portion of the form included classroom management skills, human relations, operative techniques, and professional development. Supervisors were asked to respond to each of the questions using a four point Likert scale. The unstructured segment was designed to obtain information on supervisors' hiring practices and their personal opinions in such areas as the value of

[2] Perkins, Lawrence H. Competencies of Trade and Industrial Teachers; As Perceived by Teachers, Supervisors, School Administrators and Teacher Educators. Florida State Advisory Council on Vocational and Technical Education. University of W. Florida. Pensacola. 1975.

practical trade experience, or the effect of the quality and duration of trade experience on teaching performance.

The instrument was administered either by personal interview or by telephone interview of the direct supervisors of each of the 93 non-traditionally prepared teacher subjects. To insure statewide representation in the field visit phase, teachers were sorted by type of school (e.g., Board of Cooperative Educational Services) and by geographic region. Chart I shows the geographic location of the schools involved in the survey. Seventy-five on-site visits were made and 18 surveys were administered by telephone.

Responses to questions on the structured portion of the survey were identified as being either positive (i.e., almost always, frequently) or negative (i.e., occassionly, almost never). Positive and negative responses were sorted and analyzed by occupational area, by curricular area, by course title, and by teacher performance category.

The analysis of responses to the unstructured portion involved categorization of responses, identification of consensus statements, and recording of individual supervisors' observations.

Statistical Treatment. In analyzing the survey data, t-tests for significant differences between proportions were applied. In analyzing teacher characteristics data, the test results were used to answer the question, "Are non-traditionally trained teachers like or unlike traditionally trained teachers in respect to variables which may have an effect on their hiring or performance?" The level of significance used to determine real differences between the two groups indicates the probability of these differences having occurred other than by chance. For example, an observed value of 1.96 indicates that differences between the related experience of the two groups could have happened by chance in only five out of 100 trials (.05 level of confidence). Therefore, it is concluded that real differences may exist between the two groups on the basis of years of related experience. The "Table of t" showing levels of significance is:

Table of t[3]

df = 00

Level of Significance

.10 = 1.64
.05 = 1.96
.02 = 2.33
.01 = 2.58
.001 = 3.29

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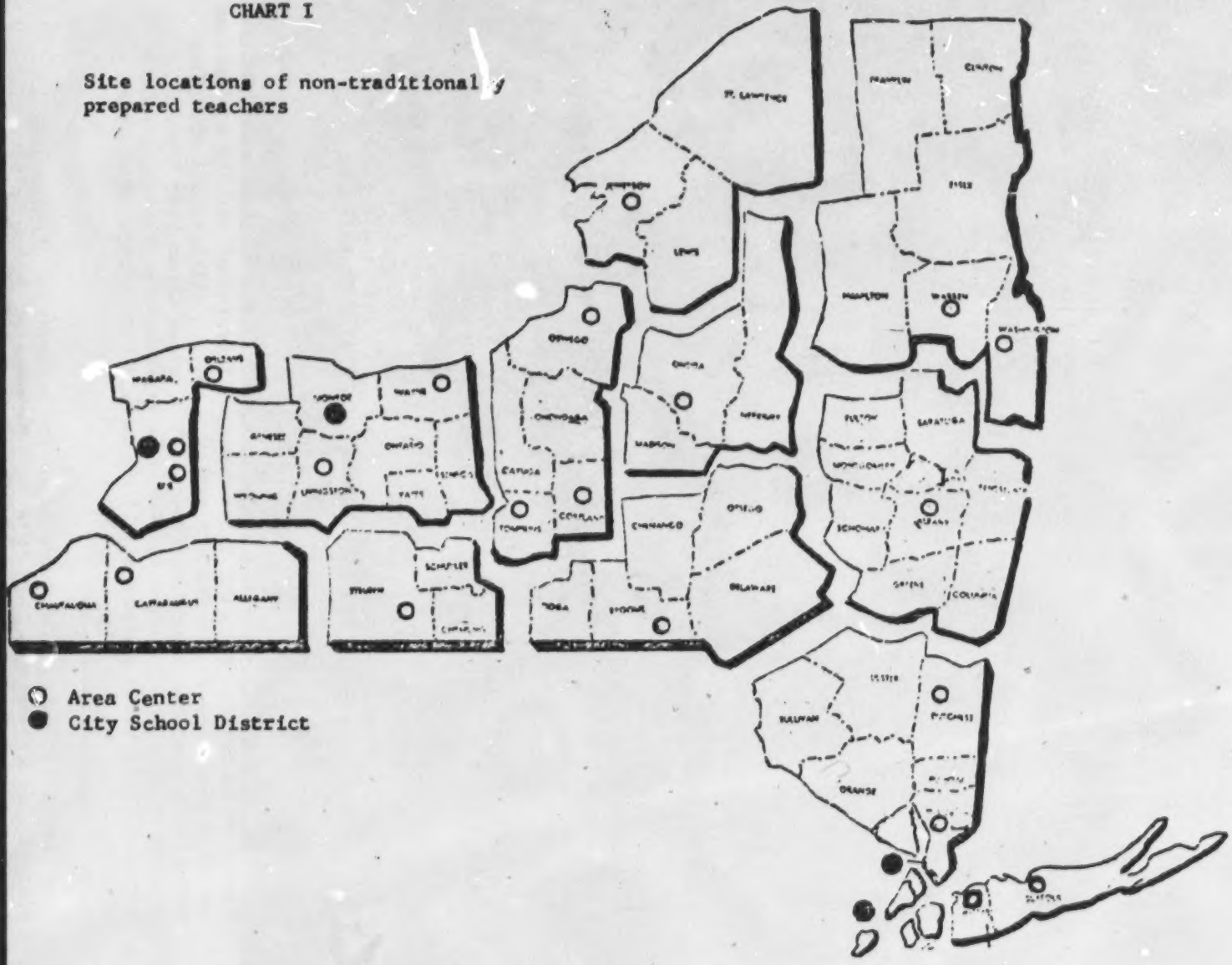
[3]Koenker, Robert H. Simplified Statistics for Students in Education Psychology. McKnight & McKnight. Bloomington, Ill. 1961. Pp. 146-7.

CHART I

Site locations of non-traditionally prepared teachers



○ Area Center
● City School District

In analyzing data obtained from the structured portion of the supervisor survey, the results of the test were used to answer the question, "Are groups of teachers like or unlike all other teachers surveyed on the basis of selected performance variables?"

Since the responses to the unstructured portion of the survey were largely subjective in nature no statistical analysis of responses was attempted.

III. RESERCH FINDINGS

The study findings are presented in three parts the first of which examines the personal and professional characteristics of both traditionally and non-traditionally prepared teachers. The second part analyzes the results of the formal on-site and telephone survey, while the final section synthesizes responses to the unstructured portions of the survey.

TEACHER CHARACTERISTICS

The examination of teacher characteristics showed that slightly more than half of all teachers surveyed (54%) had been teaching for four or more years. The overwhelming majority were male (92%) and more than half of all teachers were over thirty-four years of age (56%). Traditionally prepared teachers averaged a longer period of pre-teaching work experience in the occupation for which they were preparing students than did non-traditionally prepared teachers (18.3 years as compared to 12.8 years), and a longer period of experience in related occupations (8.6 years as compared to 3.6 years). (For the purposes of the study a related occupation was considered to be one employing some of the same work skills as would be used in the occupation being taught. For example, experience as a welder was considered to be related to auto body repair). Teacher characteristics data are shown in Appendix C.

Table III indicates that, of the total population of 445 teachers identified as having started teaching after the changes in certification requirements 352, or 79%, entered teaching with traditional training and experience backgrounds. In the area of technical education, however, the percentage of non-traditionally prepared teachers was higher than was that of traditionally prepared teachers (67%).

Using data for the same year as this study, the SED Information Center on Education[4] reported 2,536 trade, 312 technical and 360 agriculture teaching positions in the State's public schools. All teachers with five years or less of teaching experience filled 14% of these positions. Results of the survey indicated that non-traditionally prepared teachers comprised only three percent of all teachers in the occupational areas studies.

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[4]New York State. The State Education Department. Public School Professional Personnel Report 1976-77. Information Center on Education. Albany. 1977. P. 5.

TABLE III

TRADITIONAL AND NON-TRADITIONAL
PREPARATION OF TEACHERS

Occupational Area	Total	Traditional		Non-traditional	
		No.	%	No.	%
Trade and Industry	351	278	.79	73	.21
Technical	15	5	.53	10	.67
Agriculture	79	69	.87	10	.13
TOTAL	445	352	.79	93	.21

Data obtained from BEDS and from the mail survey were examined for differences in the proportion of traditionally and non-traditionally prepared teachers possessing the personal and professional characteristics examined. Statistically significant differences, at the .001 level, between the two groups were found only in age at entry into teaching and in years of experience in the occupational field being taught.

The results of the analysis of agriculture and trade subject teachers are presented in the following paragraphs. Because of the small number of traditionally prepared technical teachers (N=5) no analysis was made of technical teacher characteristics variables.

Educational Experience. Using BEDS data, teachers to be surveyed were identified by their having had five years or less of public school teaching experience.

The assumption was made that teachers with four or more years of experience in the same system were tenured, and the data were analyzed to determined if the traditionally prepared and non-traditionally prepared groups differed in this respect. No differences were found between the two groups of trade (t=.62) or of agriculture teachers (t=.71).

Sex. Results of the comparison of the two groups on the basis of sex were not significant, with no differences found for either trade (t=1.86) or agriculture (t=.84) teacher groups.

Age at Entry. BEDS data showing present age of teachers surveyed were converted to age at entry into teaching using the formula:

present age - years of educational experience = age at entry.

The data were sorted by the age groups 34 years of age or less and 35 years of age or more. Significant differences were found between the traditionally and non-traditionally prepared trade teachers at the .001

level (t=5.87) with non-traditionally prepared teachers being the younger group. No differences were found between the two agriculture groups (t=1.55).

Years in Occupation. Teachers surveyed were asked to indicate their years of pre-teaching experience in the occupation they were teaching. Responses were sorted into two groups - those with up to four years of experience and those with five years or more. Differences were found between traditionally and non-traditionally prepared trade teachers at the .001 level (t=5.43) with the former group reflecting the greater amount of experience. Given the difference found in age at entry this finding was not unexpected. Results of the test for agriculture teachers showed no differences between the traditionally and non-traditionally prepared groups (t=.96). No teachers were found in any occupational area who met only the minimum training and experience requirements for certification (See Appendix A for certification requirements).

Related Experience. Teachers were asked about their experience in jobs related to, although not the same as, the occupation they were teaching. The closeness of the related experience to the teaching field was determined through its linkage with the major curriculum area.

Where related experience, as defined on page 6, was indicated in the responses the stated job titles were identified and sorted by BEDS course codes (Appendix D). No differences were found between the two groups of trade teachers on the fact of having had some kind of related experience (t=1.23), although the closeness of the relationship to the occupation showed a possibility of differences at the .05 level, with traditionally prepared teachers showing the closer relationship (t=2.02). No differences were found between the two trade groups in length of time spent in related occupations (t=1.90). There were no differences between the two agriculture groups on existence, relatedness, or extent of related experience.

STRUCTURED SURVEY RESULTS

In this part of the survey supervisors were asked to rate each teacher as showing acceptable performance almost always, frequently, occasionally, or almost never on each of the 25 performance variables (Appendix B, page). Responses were generally positive and indicated a considerable degree of satisfaction with the performance of non-traditionally trained teachers. Table IV shows the structured survey responses by rating scale point and by occupational area.

In analyzing the results of this portion of the survey, comparisons were made between the ratings of teachers in each course title (e.g., automotive mechanics) and all other non-traditionally prepared teachers examined in that occupational area (e.g., trade). "t"-tests were used to see if any group of teachers, by course title, differed from all other teachers in that occupational area. Significant differences were found at the .001 level between the ratings of commercial art teachers (t=4.14), electro-electronics teachers (t=3.25), maritime teachers (t=3.36), technical subject teachers (t=5.42), special and miscellaneous T & I teachers (t=5.76)

and all other T & I teachers, and between agriculture teachers of other than conservation and horse handling courses (t=5.58) and all other agriculture teachers. Possible differences were found for metal work teachers (t=2.98) and service trades teachers (t=2.82) and all other trade teachers.

TABLE IV

FREQUENCY OF RESPONSES TO SURVEY OF TEACHER PERFORMANCE

Performance Level	Occupational Area		
	Trade and Industry	Technical	Agriculture
Almost Always	914	120	104
Frequently	619	70	103
Occasionally	174	16	29
Almost Never	40	3	2
No Response	78	41	12
TOTAL	1825	250	250

Where significant differences were found, further tests were conducted to see whether the differences in performance could be ascribed to any of the four major performance categories examined. The categories and numbers of related questions are shown in Table V.

TABLE V

SURVEY QUESTION IDENTIFICATION
BY PERFORMANCE CATEGORY

Category	Question Number
Classroom Management	1, 5, 6, 10, 14, 15, 21, 24, 25
Human Relations	2, 3, 7, 8, 9, 11, 16, 22
Operative techniques	4, 12, 13, 18, 20
Professional Development	17, 19, 23

The results indicate that, although supervisors' perceptions of the performance of the non-traditionally certified teachers surveyed were generally positive, the performance of some groups of teachers could be improved, particularly in the categories of classroom management and human relations.

Teachers of commercial art (t=-3.82) and of special and miscellaneous T & I courses (t=-5.17) were found to perform significantly less well in the category of classroom management than in the other performance categories. The tests indicated that the metal work teachers studied may perform less well in the classroom management (t=-3.06) and human relations (t=-3.06) categories and that the electro-electronics teachers (t=-2.65) and teachers of special and miscellaneous courses (t=-3.07) may perform less well in the human relations category than they do in the other aspects examined. In interpreting these findings it is important to keep in mind that supervisors' ratings of all teachers and groups of teachers were generally positive in all categories.

UNSTRUCTURED SURVEY RESPONSES

Analysis of the open-ended responses of supervisors to the unstructured portion of the survey constituted a major part of the study. The most generally held belief expressed by supervisors was that adequate experience in a trade prior to teaching was essential to satisfactory teacher performance. Supervisors were generally skeptical about the adequacy of the non-traditional certification route which provides a candidate for vocational teaching with four years of college preparation and only one year of practical trade experience. Such minimal experience, it was felt, could result in such teacher deficiencies as:

1. Only partial understanding of the field
2. Inability to relate to job requirements and attitudes
3. Reluctance to seek advice from tradesmen
4. Tolerance for incomplete or poor work from students
5. Inability to identify with what employers want
6. Inability to identify with how employees are treated
7. Ineffectiveness in student job placement
8. Difficulty in communicating with trade advisory group members

Although supervisors believe they can provide sufficient training in basic teaching techniques and methodology through staff inservice training it was generally agreed that they can in no way compensate for a lack of direct trade experience in actual job situations.

A diversity of opinion was found to exist among supervisors as to how much practical experience is an adequate amount. Recommendations for length of pre-teaching trade experience ranged from two to five years in

the vocational area within which one was to teach. One supervisor recommended strongly that the experience requirement be lengthened for certification in all occupational areas. Another felt that prior experience is more essential in terms of trade teaching but that in-depth college preparation is more essential for teaching the technical subjects. Furthermore, practical experience was considered to be more important for the single trade vocational teacher than for the multi-occupational course teacher.

Some respondents indicated they felt that the most desirable combination for any candidate to possess as preparation for teaching T & I subjects was that of an industrial arts degree combined with appropriate trade experience; in this regard, three to five years experience was considered desirable. The agriculture courses were so diverse and the number of non-traditionally prepared teachers so small that consensus of supervisor ratings was not possible in this area.

Another generalization apparent from the review of the unstructured responses was that personal characteristics of a teacher were considered at least as important as were professional certification requirements. Personality is felt to be "a key factor," "most important," and "essential to be effective." Such personal factors cited as necessary for the vocational teacher include the ability to be sensitive to students' needs, the ability to spark students' interest, and the ability to convey high expectancy levels for all students. Course or inservice work in the psychology of learning was suggested as being desirable.

A general weakness noted among vocational teachers by their supervisors is their reluctance to deal with paperwork. The teachers appear to be unwilling to make individual lesson plans or to provide accountability in a written form and see little need for writing in detail for any purpose.

Regarding hiring practices, employers appear to have developed a classification system whereby job descriptions are written and candidates are sought to fill vacancies without primary concern, on the part of supervisors, for certification requirements. It appears that these educational employers perceive non-traditionally prepared teachers as capable of performing given teaching tasks. No strong conviction was shown that the new certification requirements would result in better-prepared teachers; on the contrary, programs which provide for maximum college experience coupled with minimal experience suffer from a poor reputation among the supervisors surveyed.

Responses to the structured questionnaire reflecting supervisors ratings of non-traditionally prepared teachers were generally positive. Nevertheless, some negative responses did result and are indicative of certain needs which exist, if only for a minority of vocational teachers.

The analysis of the findings revealed a degree of need in the following areas:

1. Improvement in classroom management techniques
2. Greater need to work with students in developing goals
3. The need to help students improve work habits
4. Need to recognize and utilize community resources
5. Necessity of planning for individual differences
6. The need to provide for specialized requirements of disadvantaged students
7. Increased local job placement efforts

IV. CONCLUSIONS & RECOMMENDATIONS

Conclusions. This survey examined the extent of hiring non-traditionally prepared agriculture and trade and industry teachers between 1972 and 1977 in New York State. It was found that only 10 agriculture, 10 technical, and 73 T & I teachers who were teaching in the fall of 1976 fit the selection criteria. None of these teachers entered teaching having met only the minimum education and experience requirements as spelled out in the Regulations of the Commissioner of Education.

It was found, however, that traditionally prepared teachers, as a group, were somewhat older than were non-traditionally prepared teachers and had more years of experience in their teaching field and in related fields. No other differences were found between the two groups on the variables examined.

Vocational teachers who entered teaching with non-traditional preparation generally were those who had obtained a college degree in a course field other than the one which they were teaching and who initially worked in their trade or agriculture area. The majority (91%) of T & I teachers studied reported from three to twenty-five years of trade experience in addition to having a degree and certification in teaching from some area other than their teaching field. A number of teachers reported being certified to teach science (N=3), social studies (N=5), or industrial arts (N=23). Non-traditionally prepared agriculture teachers generally reported several years of practical experience in their teaching field, but no baccalaureate degree.

The study examined supervisors' perceptions of the performance of non-traditionally prepared teachers. The analysis of teacher performance was overwhelmingly positive on most of the variables examined. However, supervisors preceived that teachers in some vocational subjects could improve in classroom management and human relations skills.

The supervisors surveyed indicated that they believed a baccalaurate degree plus a minimum of two years full-time trade experience to be essential, and that personality characteristics of teachers are at least as important as is their professional preparation.

The impact of the five-year college based vocational programs which was developed as a result of the 1971-72 changes in teacher certification generally has not yet affected the operations of local school districts. However, the changes in certification requirements appear to have made it easier for teachers with other types of certification, such as science or industrial arts, to become vocationally certified.

Recommendations. The identification of specific need areas in the responses to the structured survey indicates some possible direction for inservice training. Programs which stress behavioral objectives, classroom management, modularized curriculum, and linkage with guidance personnel could be utilized to strengthen the identified areas of need. In addition, training in the identification of local community resources and the study of local job market trends could be provided to correct deficiencies in these areas.

The analysis of supervisors' unstructured survey responses also reinforced the need for inservice education for non-traditionally prepared teachers. Courses dealing with such subjects as the psychology of motivation, technical writing, record keeping techniques and educational methodology would be appropriate courses for vocational teachers who perform unsatisfactorily in these areas. Some administrators felt that such needs could be met through the combination of high quality supervision, on-going evaluation and staff development programs within the employing institutions. Recommendations of the supervisors for strengthening the performance of vocational education teachers constitute what may be the principal value of the study.

As a result of this study, a comprehensive profile of the work experience and educational backgrounds of non-traditionally certified teachers in agriculture and T & I education has been constructed. Future trends may be compared against this base of information. However, later studies of this nature should include an examination of the performance of traditionally prepared teachers as a comparison group.

Appendix A

PART 80

Teachers Certificates

Amendments to Regulations of the Commissioner of Education
Pursuant to Section 207 of the Education Law

80.5 Certificates valid for teaching occupational subjects (Effective September 1, 1974)

A candidate may obtain a certificate in an occupational subject upon completion of a program registered or approved by the Department for the preparation of occupational teachers. The form of the certificate (provisional-valid for five years from date of issuance or permanent) to be issued, will be determined by the recommending institution upon approval of the program by the Department. In the alternative a certificate may be obtained upon evidence that the requirements noted below have been met:

(a) Agriculture, business and distributive education (occupational), health occupations, home economics (occupational), technical subjects, and trade subjects - as defined by the Commissioner. Baccalaureate degree programs.

(1) Provisional Certificate

(i) Preparation: The candidate shall hold a baccalaureate degree, based upon a four-year program of collegiate preparation, from a regionally accredited higher institution or from a higher institution approved or registered by the Department for the preparation of teachers in the occupational areas. The program shall include: 36 semester hours in the occupational teaching area for which certification is sought, 12 semester hours in professional education, and a college supervised student teaching experience.
(ii) Experience: A minimum of one calendar year of appropriate experience in the occupation for which the certificate is to be issued. (This experience in blocks of not less than five months, may be included within the period of study for the baccalaureate degree if designed and supervised by the higher institution and approved by the Department. In the case of persons seeking certification in the trade and technical subjects, such experience may be earned prior to the applicant's matriculation for the baccalaureate degree.)
(iii) Time validity: The provisional certificate shall be valid for five years from date of issuance.

(2) Permanent certificate

(i) Preparation: The candidate shall have completed a master's degree in or related to the occupational field of teaching service or thirty semester hours of graduate study distributed among the technical courses pertinent to the field of teaching service, the social and behavioral sciences, and professional education. The total program of preparation shall include the requirements for the issuance of the provisional certificate.

(b) Health occupations, technical subjects, trade subjects, and specialized subject areas in agriculture, business and distributive education (occupational), and home economics (occupational) - as defined by the Commissioner. Associate degree program.

(1) Provisional Certificate

(i) Preparation: The candidate shall hold an associate degree based upon a two-year program of collegiate preparation in the occupational area for which certification is sought from a regionally accredited higher institution or a higher institution approved or registered by the Department for the preparation of teachers in the occupational area for which certification is sought; eighteen semester hours in professional education; and a college supervised student teaching experience.
(ii) Experience: A minimum of two consecutive years of appropriate experience in the occupation for which the certificate is to be issued. (This experience, clearly related to the technology in which the associate degree is granted, may be accrued either prior to or upon completion of the associate degree program.)
(iii) Time validity: The provisional certificate shall be valid for five years from date of issuance.

(2) Permanent Certificate

(i) Preparation: The candidate shall have completed thirty semester hours of upper level collegiate study appropriate for the certification area. The total program of preparation shall include the requirements for the issuance of the provisional certificate.

(c) Trade subjects, and specialized subject areas in agriculture, health occupation, and home economics (occupational) - as defined by the Commissioner. Non-degree program.

(1) Provisional Certificate

(i) Preparation: The candidate, subsequent to high school graduation (or its equivalent), shall have completed thirty semester hours in approved courses at an institution of higher education approved or registered for the preparation of teachers in the area for which the certicate is to be issued; including eighteen hours of professional education; and a college supervised student teaching experience.
(ii) Experience: A minimum of four consecutive years of appropriate experience in the occupation for which the certificate is to be issued. (This experience, clearly related to the occupation for which the certificate is to be issued, may be accrued either prior to or upon completion of high school graduation.)
(iii) Time validity: The provisional certificate shall be valid for five years from date of issuance.

(2) Permanent Certificate

(i) Preparation: The candidate shall have completed thirty semester hours of collegiate level study appropriate for the certification area. The total program of preparation shall include the requirements for the issuance of the provisional certificate.

(d) Additional Requirement

(1) Persons seeking certification to teach in any of the general health occupations shall hold the appropriate New York State registration. Persons seeking certification to teach in the practical nursing program shall hold valid registration in New York State as a professional nurse.

(2) Persons seeking certification to teach in any occupational subject area which requires a person to hold a valid state or federal license to legally perform that service shall hold the appropriate license.

(e) Substitution

One year of paid, full-time satisfactory teaching experience in an occuptional subject may be accepted in lieu of the college supervised student teaching when such experience carries the recommendation of the school district administrator under whom the service was performed.

(f) Coordinator of Diversified Cooperative Work-Study Programs

A provisional or permanent certificate for teaching industrial arts or an occupational subject may be extended to include service as a coordinator upon completion of the following requirements: six semester hours of collegiate level study in the organization and development of diversified cooperative programs in a program registered or approved by the Department.

(g) Exceptions to Stated Preparation

(1) Persons legally employed in a position for which no certificate existed prior to September 1, 1974 may be issued a statement of continued eligibility, provided that three years of service have been completed by that date.

(2) The validity of a statement of continued eligibility shall be limited to the specific area of service for which it is issued, but may be valid in any school district in New York.

(3) The candidate for the statement of continued eligibility shall hold a credential valid for service in the public schools of New York.

APPENDIX B

SURVEY OF THE EMPLOYMENT AND PROFESSIONAL PREPARATION OF
ALTERNATIVELY CERTIFIED TEACHERS OF
AGRICULTURE AND TRADE/INDUSTRY SUBJECTS IN
NEW YORK STATE

1976-77

The Bureau of Occupational Education Research of the State Education Department is conducting a survey of the employment and professional training background of recently certified teachers in your occupational subject area, who have entered the teaching profession under the 1973 revised regulations. A preliminary review of Department records indicates that you are in this category.

Please take a few minutes to complete the questions below and mail the questionnaire in the enclosed addressed envelope. Responses to this questionnaire, together with information on file in the Department, will enable us to determine the status and patterns of professional preparation for occupational education teachers. Responses will be used for research purposes only and will be regarded as strictly confidential. The indentification number shown will be used to relate responses on this form with information contained in the Department's BEDS data files.

If you have any questions concerning the survey, you may call Mrs. Dorothy King at the State Education Department on 518: 474-6386. Thank you for your cooperation.

TEACHER IDENTIFICATION NUMBER
(For Internal Department Use Only) . . . . . ☐

1. Before becoming a teacher, how many years did you work in the occupation you are teaching? . . . . . ☐

2. Have you ever worked at any other occupation(s) related to the one you are teaching? . . . . . Yes ☐ (1) No ☐ (2)

3. If yes, indicate the job title(s) and years of experience in the appropriate spaces below.

   a. Job title(s)

   _____

   _____

   b. Total years experience in these occupations . . . . . ☐

4. Indicate the highest college degree held when you started teaching. (Check one)

   None ☐ (1) Associate ☐ (2) Bachelor's ☐ (3) Graduate ☐ (4)

5. What were your major and minor fields of study at your lowest degree level?

   a. Major _____

   b. Minor _____

6. Are you teaching an occupational subject in which you have a college degree? . . . . . Yes ☐ (1) No ☐ (2)

THE UNIVERSITY OF THE STATE OF NEW YORK
THE STATE EDUCATION DEPARTMENT
ALBANY, NEW YORK 12234

ASSOCIATE COMMISSIONER FOR
RESEARCH AND EVALUATION

DIVISION OF RESEARCH
BUREAU OF OCCUPATIONAL EDUCATION RESEARCH
518: 474-6386

Dear

The Bureau of Occupational Education Research of the State Education Department is conducting a survey of the employment and professional training background of recently certified teachers of agriculture and trade and industry subjects. A review of Department records indicates that the teacher(s) on the enclosed list, under your supervision, are in this category.

A major portion of information needed for the survey is being extracted from the BEDS data files. Supplementary data on pre-teaching employment and professional preparation is being obtained from responses to a mail questionnaire, a copy of which is attached. We hope you will encourage teachers receiving the questionnaire to respond.

Following analysis of the survey responses, a sample of supervisors will be contacted by telephone or through on-site visits to examine their experiences in working with persons entering the teaching profession under the 1973 revised regulations.

If you have any questions concerning the survey, you may call Mrs. Dorothy King at the State Education Department on 518: 474-6386. Thank you for your cooperation.

Sincerely,

Alan Robertson

Alan G. Robertson, Chief
Bureau of Occupational
Education Research

AGR/ln
Attachment

cc: Dist. or BOCES
Chief School
Administrator

THE UNIVERSITY OF THE STATE OF NEW YORK
THE STATE EDUCATION DEPARTMENT
ALBANY, NEW YORK 12234

ASSOCIATE COMMISSIONER FOR
RESEARCH AND EVALUATION

DIVISION OF RESEARCH
BUREAU OF OCCUPATIONAL EDUCATION RESEARCH
518 474-6385

Several weeks ago we sent you a brief questionnaire on your pre-teaching education and work experience. We have not yet received your completed survey form.

The data collected in the survey will be used to assess the effect of recent changes in teacher certification requirements on hiring practices of local school districts. Strict confidentiality of responses is being maintained.

Attached please find a second copy of the form, with return envelope for your use. Thank you for your help with this survey.

Sincerely,

Alan Robertson

Alan G. Robertson
Chief, Bureau of Occupational
Education Research

AGR/bl
Attachment

THE UNIVERSITY OF THE STATE OF NEW YORK
THE STATE EDUCATION DEPARTMENT
ALBANY, NEW YORK 12224

ASSOCIATE COMMISSIONER FOR
RESEARCH AND EVALUATION

DIVISION OF RESEARCH
BUREAU OF OCCUPATIONAL EDUCATION RESEARCH
518 474-6386

Dear

Several weeks ago you were notified of a survey which was initiated in the New York State Plan for Occupational Education and is being conducted by the Bureau of Occupational Education Research. The purposes of the study are: (1) to determine the extent of hiring of agriculture and trade and industry teachers in New York State's public schools who are eligible for teacher certification under the revised teacher certification regulations; and (2) to assess the performance of this teacher population, as perceived by supervisors. The return rate for responses to the mail questionnaire to selected teachers has been most gratifying and we have started preliminary data analysis.

The second phase of the study will be based on data obtained from direct supervisors of persons entering teaching under the revised teacher certification requirements. The data will consist of supervisors' perceptions of the general performance of the teacher population being surveyed vis à vis their certification route. We plan to administer the questionnaire by telephone or through personal interviews at selected locations during the period June 20 through August 26, 1977, with telephone interviews being concentrated between July 11 and 22, 1977. Teachers and supervisors responding will not be identified, and the data obtained will be grouped in the study.

We again ask for your assistance with this survey. Our next contact with you will be by telephone within the next few weeks, at which time we either will ask for responses to the telephone questionnaire or will arrange a mutually satisfactory date for the personal interview. The interviews will be conducted by Mr. Lane Van Orman, an experienced vocational program administrator who currently is on sabbatical leave and is working on his Ph.D. at Rutgers University.

Thank you again for your cooperation.

Sincerely,

Alan G. Robertson

Alan G. Robertson, Chief
Bureau of Occupational
Education Research

A Survey of Hiring and Performance of Non-Traditionally Certified Teachers State Plan Project

Supervisors Rating Scale for Non-Traditionally Trained Teachers

Report obtained for confidential research purpose only; data will be reported collectively and teachers will not be identified in the study report.

School _____ Date _____

City _____ Teacher I.D. Number _____

Supervisor _____

☐ This teacher is no longer employed by this system.

☐ I have not supervised this teacher

The Teacher	Almost always	Frequently	Occassionally	Almost never
1. Maintains a safety and accident prevention program in compliance with safety laws on O.S.H.A. regulations.	☐	☐	☐	☐
2. Assists students in developing positive attitudes toward efficient work habits and quality workmanship.	☐	☐	☐	☐
3. Displays vigor, enthusiasm and interest toward students and in teaching.	☐	☐	☐	☐
4. Has up-to-date expertise in his area of occupational competency.	☐	☐	☐	☐
5. Develops comprehensive lesson plans and uses carefully planned units of instruction.	☐	☐	☐	☐
6. Corrects disciplinary problems, consistant with school policy, fairly and decisively.	☐	☐	☐	☐
7. Exhibits a positive attitude toward school goals and objectives.	☐	☐	☐	☐
8. Communicates well with students as individuals.	☐	☐	☐	☐
9. Demonstrates behavioral patterns and ethical procedures appropriate for a professional vocational educator.	☐	☐	☐	☐

	Almost always	Frequently	Occassionally	Almost never	
10. Maintains a clean and well organized learning environment.	☐	☐	☐	☐	(58)
11. Promotes actively job placement with local business and industry.	☐	☐	☐	☐	(59)
12. Assists students in developing sound study skills and work habits.	☐	☐	☐	☐	(60)
13. Uses problem solving techniques skillfully.	☐	☐	☐	☐	(61)
14. Makes efficient use of time and materials.	☐	☐	☐	☐	(62)
15. Plans and provides for individual differences among students.	☐	☐	☐	☐	(63)
16. Aids students in developing career goals.	☐	☐	☐	☐	(64)
17. Actively pursues a long range professional development plan.	☐	☐	☐	☐	(65)
18. Locates and uses community resources in instructional planning.	☐	☐	☐	☐	(66)
19. Assembles and maintains professional resource materials for personal use.	☐	☐	☐	☐	(67)
20. Graduates students from his course who perform well on the job.	☐	☐	☐	☐	(68)
21. Maintains an inventory of classroom and laboratory supplies, tools and equipment.	☐	☐	☐	☐	(69)
22. Tempers agressiveness with tact, and is sensitive to the needs of others.	☐	☐	☐	☐	(70)
23. Supports appropriate professional groups, organizations or associations.	☐	☐	☐	☐	(71)
24. Plans special instructional strategies for disadvantaged and handicapped youth.	☐	☐	☐	☐	(72)
25. Plans, prepares and conducts "open houses" in order to promote district educational goals.	☐	☐	☐	☐	(73)

Write any comments on the reverse side, and mail in enclosed envelope.

Unstructured Survey Form

Questions for Supervising Personnel

1. Is there a policy relating to the hiring of non-traditional or traditionally trained teachers?

2. Is this a board policy or superintendent recommendation?

3. Is practical experience really necessary for successful teaching of Trade and Industrial subjects?

4. Do you feel there is a difference in the quality of teaching when the teacher has significant trade or industrial experience?

5. Do your duties include actual participation in the selection and employment of teachers?

6. What is your education and experience?

Appendix C

Teacher Characteristic Data

	Auto Mechanics		Auto Body		Aviation		Commercial Art		Commercial Printing		Drafting		Building Maintenance	
	T=61	NT= 10	T= 17	NT= 0	T= 5	NT= 1	T=5	NT=6	T= 14	NT= 7	T= 7	NT= 7	T=3	NT= 2
Present degree														
None	51	-	16		4	-	5	-	14	-	5	-	3	-
Associate	10	-	1		-	-	-	-	-	-	1	-	-	-
Baccalaureate	-	9	-		-	1	-	3	-	5	1	5	-	1
Graduate	-	1	-		1	-	-	3	-	2	-	2	-	1
Years in teaching														
One	7	1	3		1	-	1	1	1	-	-	-	-	1
Two	11	1	1		-	-	-	-	-	1	3	1	-	-
Three	12	-	2		2	-	4	-	1	3	1	-	-	1
Four	13	4	4		1	1	-	3	5	-	1	3	1	-
Five	18	4	7		1	-	-	2	7	3	2	3	2	-
Sex														
Male	61	10	17		5	-	4	4	14	7	6	7	3	2
Female	-	-	-		-	1	1	2	-	-	1	-	-	-
Age														
25 or less	1	-	1		-	1	-	-	-	2	3	-	-	-
26 to 34	29	7	3		-	-	1	4	5	4	1	2	-	2
35 to 44	16	-	9		2	-	2	2	4	1	2	2	1	-
45 or more	15	3	5		3	-	2	-	5	-	1	3	2	-
Years in Occupation														
None to four	6	6	-		-	1	-	2	-	4	-	2	-	1
Five or more	55	4	17		5	-	5	4	14	3	7	5	3	1
Related Experience														
Related	18	2	4		2	-	1	6	3	2	-	-	2	1
Other	22	4	2		-	1	1	-	3	-	4	3	-	1
Years Related Experience														
None to seven	23	3	1		2	1	2	6	2	2	2	-	-	1
Eight or more	17	3	5		-	-	-	-	4	-	2	3	2	1
Pre-teaching Degree														
None	48	-	16		5	-	4	-	12	-	4	-	3	-
Associate	13	-	1		-	-	1	-	2	-	3	-	-	-
Baccalaureate	-	9	-		-	1	-	4	-	5	-	6	-	1
Graduate	-	1	-		-	-	-	2	-	2	-	1	-	1
Degree Field														
Related	7	2	1		-	-	-	2	-	3	-	1	-	1
Other	6	8	-		1	1	1	4	2	4	3	6	-	1

T=Traditional
NT=Non-Traditional

Appendix C (cont.)

Teacher Characteristic Data

	5247-52										5268-72		5266-67	
	Construction & Maintenance		Electricity-Electronics		Electric-Mechanics		Maritime		Services		Metal		Metal	
	T=59	NT=11	T=37	NT=7	T=17	NT=0	T=2	NT=2	T=19	NT=3	T=13	NT=3	T=12	NT=3
Present degree														
None	50	-	28	-	14		2	-	19	-	12	-	9	-
Associate	4	-	3	-	3		-	-	-	-	1	-	3	-
Baccalaureate	3	9	6	6	-		-	2	-	3	-	2	-	2
Graduate	2	2	-	1	-		-	-	-	-	-	1	-	1
Years in teaching														
One	2	3	2	-	1		-	-	7	-	-	-	2	-
Two	8	1	7	-	2		-	1	3	2	5	1	1	1
Three	13	3	7	3	1		1	1	4	-	5	-	2	1
Four	17	2	10	2	3		1	-	2	-	1	-	5	1
Five	19	2	11	2	10		-	-	3	1	2	2	2	-
Sex														
Male	59	11	37	7	17		2	2	5	-	13	3	12	3
Female	-	-	-	-	-		-	-	14	3	-	-	-	-
Age														
25 or less	1	-	-	-	-		-	-	2	-	-	-	-	-
26 to 34	8	9	8	4	1		-	-	6	-	4	1	1	3
35 to 44	24	1	10	2	4		1	1	5	2	6	-	7	-
45 or more	26	1	19	1	12		1	1	6	1	3	2	4	-
Years in Occupation														
None to four	1	-	37	2	-		-	-	1	-	-	1	-	2
Five or more	58	11	-	5	17		2	2	18	3	13	1	12	1
Related Experience														
Related	20	5	6	-	3		-	2	1	-	6	-	3	1
Other	11	2	9	3	4		-	-	4	1	1	1	2	-
Years Related Experience														
None to seven	13	4	7	1	3		-	-	3	-	5	1	3	1
Eight or more	18	3	8	2	4		-	2	2	1	2	-	2	-
Pre-teaching Degree														
None	55	-	29	-	16		2	-	16	-	12	-	9	-
Associate	4	-	8	-	1		-	-	3	-	1	-	3	-
Baccalaureate	-	10	-	6	-		-	2	-	3	-	3	-	2
Graduate	-	1	-	1	-		-	-	-	-	-	-	-	1
Degree Field														
Related	-	-	-	-	1		-	2	-	1	-	1	-	-
Other	4	11	8	7	-		-	-	3	2	1	2	4	3

T=Traditional
NT=Non-Traditional

Appendix C (cont.)

Teacher Characteristic Data

	Special & Misc.		Technical		Conservation		Horse Handling & Care		Other Agriculture	
	T= 8	NT=11	T= 5	NT= 10	T=11	NT=2	T=2	NT= 3	T= 56	NT= 5
Present degree										
None	6	-	4	-	1	1	-	3	-	4
Associate	2	-	-	-	-	-	-	-	-	1
Baccalaureate	-	9	1	5	7	1	2	-	48	-
Graduate	-	2	-	5	3	-	-	-	8	-
Years in teaching										
One	-	1	-	-	2	-	2	-	13	-
Two	3	2	-	1	2	-	-	1	12	1
Three	1	-	-	1	3	-	-	-	9	3
Four	2	6	2	2	3	1	-	1	9	-
Five	2	2	3	6	1	1	-	1	13	1
Sex										
Male	6	7	5	9	11	2	2	2	50	4
Female	2	4	-	1	-	-	-	1	6	1
Age										
25 or less	1	3	1	1	3	-	-	-	18	1
26 to 34	3	6	2	2	8	2	-	1	34	2
35 to 44	4	1	2	1	-	-	2	2	2	2
45 or more	-	1	-	6	-	-	-	-	2	-
Years in Occupation										
None to four	-	7	-	2	8	1	-	-	32	2
Five or more	8	4	5	8	3	1	2	3	24	3
Related Experience										
Related	-	-	1	2	4	1	1	-	26	2
Other	6	9	1	1	5	1	-	-	9	1
Years Related Experience										
None to seven	4	8	-	5	6	1	1	-	24	2
Eight or more	2	1	2	2	3	1	-	-	12	1
Pre-teaching Degree										
None	6	-	5	-	9	-	1	-	46	-
Associate	2	-	-	-	2	-	1	-	10	-
Baccalaureate	-	10	-	9	-	1	-	3	-	4
Graduate	-	1	-	1	-	1	-	-	-	1
Degree Field										
Related	-	-	-	3	8	1	2	1	48	1
Other	2	10	1	7	3	-	-	-	8	-

APPENDIX D

Occupational Education Course Codes
Basic Education Data System

TRADE AND TECHNICAL EDUCATION

TRADE

Automotive

5212	Auto Mechanics
5213	Service Station Attendant
5214	Auto Body and Fender Repairing
5215	Diesel Mechanics
5216	Small Engine Repairing
5217	Other Automotive

Aviation

5218	Aviation Power Plan Mechanics (FAA)
5219	Aviation Airframe Mechanics (FAA)
5220	General Aviation Mechanics
5221	Aviation Ancillary Services
5222	Flight Training
5223	Other Aviation Services

Commercial Art and Printing

5224	Commercial Art
5225	Commercial Photography
5226	Offset Lithography
5227	Advertising Art
5228	General Printing
5229	Interior Decorating
5230	Other Commercial Art and Printing

Construction and Maintenance

5231	Carpentry
5232	Custodial Services
5233	Building Construction
5234	Heavy Equipment (Construction)
5235	Masonry
5236	Millwork and Cabinet Making
5237	Painting and Decorating
5238	Plastering
5239	Plumbing and Pipefitting
5240	Plumbing and Heating
5241	Building Maintenance
5242	Bricklaying
5243	Other Construction and Maintenance

Drafting

5244	Architectural Drafting
5245	Electrical/Electronics Drafting
5246	Mechanical Drafting

Electrical-Electronics

5247	Electrical (Residential)
5248	Electrical (Commercial)
5249	Industrial Electronics
5250	Radio and Television Servicing
5251	TV Production Services (Communication Electronics Telephone & Telegraph)
5252	Other Electrical — Electronics

Electro-Mechanics

5253	Air Conditioning
5254	Automatic Heating
5255	Appliance Repair
5256	Business Machine Maintenance
5257	Instrumentation Mechanics
5258	Refrigeration Servicing
5259	Other Electro-Mechanics

Maritime

5260	Fisheries
5261	Boat Building and Maintenance
5262	Maritime (Engine)
5263	Maritime (Deck)
5264	Maritime (Steward)
5265	Other Maritime

Metalworking

5266	Machine Tool Operator
5267	Machine Shop
5268	Metals Fabrication
5269	Sheet Metal
5270	Welding
5271	Patternmaking — Foundry
5272	Other Metalworking

Services

5273	Barbering
5274	Cosmetology
5275	Dry Cleaning
5276	Other Services

Special and Miscellaneous

5289	Plastics
5290	Multi-Occupational (Exploratory)
5291	Pre-vocational Exploratory

TECHNICAL EDUCATION

5312	Aeronautics and Aerospace
5314	Architectural Drafting and Building Construction
5316	Computer Circuitry
5318	Electrical
5320	Electronics
5322	Electro-Mechanics
5324	Fashion Design
5326	Industrial Chemistry
5328	Instrumentation and Control Systems
5330	Mechanical Design and Construction
5332	Structural Drafting and Design
5398	Other Technical Curriculums

AGRICULTURE

4812	Agriculture 7
4814	Agriculture 8
4816	Agriculture 1
4818	Agriculture 2
4820	Agriculture Business
4822	Agriculture Mechanization
4824	Conservation
4826	Farm Production, Management and Mechanics (double period)
4828	Farm Production and Management (single period)
4830	Farm Mechanics (single period)
4832	Ornamental Horticulture
4834	Agriculture II — Conservation
4836	Agriculture II — Ornamental Horticulture
4838	Small Animal Science
4840	Horse Handling and Care
4898	Other Agriculture

BUSINESS EDUCATION

4912	General Business (Introduction to Business)
4914	Exploratory Business Education
4916	Business Mathematics (and applied)
4918	Typewriting 1 (first year)
4920	Typewriting 2 (second year)
4922	Typewriting 3 (third year)
4924	Typewriting (Introductory or Exploratory)
4926	Typewriting (Personal)
4928	Accelerated Typing
4930	Manual Shorthand 1
4932	Manual Shorthand 2
4934	Manual Shorthand 3 (third year)
4936	Manual Shorthand Transcription 1
4938	Manual Shorthand Transcription 2
4940	Machine Shorthand 1 (first year)
4942	Machine Shorthand 2 (second year)
4944	Machine Shorthand Transcription
4946	Personal Use Shorthand
4948	Accelerated Shorthand
4950	Machine Transcription
4952	Secretarial Practice
4954	Office Practice 1 (first year of Machine Operation)
4956	Office Practice 2 (second year or Advanced Business Machines)
4958	Clerical Practice 1 (first year)
4960	Clerical Practice 2 (second year)
4962	Business Communications
4964	Bookkeeping and Accounting 1 (first year)
4966	Bookkeeping and Accounting 2 (second year)
4968	Bookkeeping and Accounting 3 (third year)
4969	Machine Bookkeeping
4970	Accelerated Bookkeeping
4971	Recordkeeping 1 (first year)
4972	Recordkeeping 2 (second year)
4973	Recordkeeping 3 (third year)
4974	Key Punch Operations (Separate Subject)
4975	Automatic Business Data Processing 1

4976	Automatic Business Data Processing 2
4977	Other Automatic Business Data Processing
4978	Business Organization and Management
4979	Consumer Education
4980	Business Law
4981	Office Reproduction Operations (Separate Subject)
4983	Integrated Business Practice
4984	Twelfth-Year Vocational Business Practice
4985	Orientation to Work
4986	Civil Service
4987	Senior Intensive Program (Stenography)
4988	Office Simulation — Separate Course
4998	Other Business Subjects

DISTRIBUTIVE EDUCATION

5812	Exploratory Distribution and Marketing
5814	Distribution and Marketing
5816	Distribution 2 (second year) (Or 3-4, N.Y.C.)
5818	Distribution 3 (third year)
5820	Introduction to Marketing
5822	Introduction to Traffic Management
5824	Supermarket Merchandising
5826	Service Station Management
5828	Advertising and Sales Promotion
5832	Consumer Education
5834	Salesmanship
5898	Other Distributive Education

HOME ECONOMICS

OCCUPATIONAL

5012	HE 13 — Preparation for Employment
5014	HE 14 — Becoming Employable
5016	HE 15 — Training for Wage Earning
5018	HEOE — Child Care Services
5020	HEOE — Child Care Services (Advanced)
5022	HEOE — Clothing Services
5024	HEOE — Clothing Services (Advanced)
5026	HEOE — Food Services
5028	HEOE — Food Services (Advanced)
5030	HEOE — Home Furnishings Services
5032	HEOE — Home Furnishings Services (Advanced)
5034	HEOE — Housekeeping Services
5036	HEOE — Housekeeping Services (Advanced)
5038	Multi Services

Food Occupations

5040	Baking
5042	Catering and Restaurant Management
5044	Cook/Chef
5046	Meat Cutting/Packaging
5048	Commercial Foods
5050	Other Quantity Foods

Clothing Occupations

5052	Dressmaking
5054	Clothing Trades
5056	Tailoring
5058	Textile Manufacturing
5060	Upholstering and Drape Making
5062	Other Textile Production and Fabrication

NON-OCCUPATIONAL

5064	Home Economics — Grade 5
5066	Home Economics — Grade 6
5068	Home Economics — Grade 7
5070	Home Economics — Grade 8
5072	HE 1 — Personal and Child Development
5074	HE 2 — Personal and Family Management
5076	HE 3 — Personal and Family Relationships
5078	Human Development
5080	Housing, Furnishings, and Equipment
5082	Food and Nutrition
5084	Textiles and Clothing
5086	Management
5088	Buymanship
5090	Career
5092	Leisure
5094	Health and Safety
5096	Relationships

OTHER

5097	Future Homemakers of America
5098	Other Home Economics

HEALTH OCCUPATIONS EDUCATION

5912	Health Occupations Core Program (Foundations)
5913	Biomedical Equipment Assisting
5914	Community Health Assisting
5915	Dental Laboratory Assisting (Mechanics)
5916	Dental Assisting (In Office)
5917	Dental Assisting — Advanced (In Office)
5918	Dental Laboratory Assisting (Technician)
5919	Environmental Health Assisting
5920	Health Assisting (Health Services, Health Careers)
5921	Health Assisting — Advanced (Health Services, Health Careers)
5922	Home Health Assisting
5924	Medical Emergency Assisting
5926	Medical Emergency Assisting — Refresher
5928	Medical Laboratory Assisting
5930	Medical Office Assisting
5932	Medical Office Assisting — Advanced
5934	Medical Supply Assisting
5936	Medical Therapy Assisting
5938	Mental Health Assisting
5940	Nurse Assisting
5942	Nursing, Licensed Practical — Year 1
5944	Nursing, Licensed Practical — Year 2
5946	Occupational Therapy Assisting
5948	Ophthalmic Dispensing
5950	Pharmaceutical Assisting
5952	Physical Therapy Assisting
5954	Recreational Therapy Assisting
5956	School Health Assisting
5998	Other Health Occupations

COOPERATIVE WORK EXPERIENCE

7312	Agriculture
7314	Business/Office
7316	Distribution/Marketing
7318	Health Occupations
7320	Home Economics Occupational
7322	Trade/Industrial
7324	Work Experience and Career Exploration (WECEP)
7326	Diversified Cooperative
7328	Vocational Work Study
7398	Other Cooperative Work Experience

APPENDIX E

Table I

T-test Data Tables
Teacher Characteristics

T & I Educational Expetience, 1-3 years	n*	%n	N	%N	t	p
Traditional	128	46	278	100	.62	N.S. (Not Significant)
Non-Traditional	31	42	73	100		

T & I Sex, Male	n	%n	N	%N	t	p
Traditional	260	94	278	100	1.86	N.S.
Non-Traditional	63	86	73	100		

T & I Age 34 years or less	n	%n	N	%N	t	p
Traditional	106	38	278	100	5.87	.001
Non-Traditional	53	73	73	100		

T & I - Years in Occ., 5 or more	n	%n	N	%N	t	p
Traditional	272	98	278	100	5.43	.001
Non-Traditional	48	68	73	100		

*n = number of responses for variable
%n = percent of responses for variable
N = number, total population
%N = percent, total population
t = observed value
p = probability level

Table I, cont.
T-test Data Table
Teacher Characteristics

T&I - Related Experience, positive	n	%n	N	%N	t	p
Traditional	138	50	278	100	1.23	N.S.
Non-Traditional	42	58	73	100		

T&I-Degree of Relatedness, positive	n	%n	N	%N	t	p
Traditional	69	50	138	100	2.02	.05
Non-Traditional	14	33	42	100		

T&L-Degree in Teaching Field, positive	n	%n	N	%N	t	p
Traditional	9	21	43	100	.39	N.S.
Non-Traditional	13	18	73	100		

Agriculture-Edu, Exp, 1-3 years	n	%n	N	%N	t	p
Traditional	43	62	69	100	.71	N.S.
Non-Traditional	5	50	10	100		

Table I, cont.

T-test Data Table
Teacher Characteristics

Agriculture Sex-Male	n	%n	N	%N	t	p
Traditional	63	91	69	100	.84	N.S.
Non-Traditional	8	80	10	100		

Agriculture-Age 34 years or less	n	%n	N	%N	t	p
Traditional	64	93	69	100	1.55	N.S.
Non-Traditional	7	70	10	100		

Agriculture-years in Occ.=5 or more	n	%n	N	%N	t	p
Traditional	38	55	69	100	.96	N.S.
Non-Traditional	7	70	10	100		

Agriculture-Related Experience	n	%n	N	%N	t	p
Traditional	46	67	69	100	.42	N.S.
Non-Traditional	6	60	10	100		

Table I, cont.

T-test Data Table
Teacher Characteristics

Agriculture-Degree of Relatedness	n	%n	N	%N	t	p
Traditional	32	70	46	100	.93	N.S.
Non-Traditional	3	50	6	100		

APPENDIX E

Table II

T-test Data Tables
Structured Survey Responses

Automotive Mechanics	n *	%n	N	%N	t	p
Total T & I Responses	1304	83	1575	100	.35	N.S.
Automotive Responses	204	82	250	100		(Not Significant)

Aviation	n	%n	N	%N	t	p
Total T & I Responses	1777	99	1800	100	1.29	N.S.
Aviation Responses	23	92	25	100		

Maintenance & Construction	n	%n	N	%N	t	p
Total T & I Responses	1244	83	1500	100	1.63	N.S.
Maintenance & Construction Responses	256	79	325	100		

Commercial Art	n	%n	N	%N	t	p
Total T & I Responses	1498	91	1650	100	4.14	.001
Commercial Art Responses	118	79	150	100		

*n = number, positive responses
%n = percent, positive responses
N = number, total responses
%N = percent, total responses
t = observed value
p = probability level

Table II, cont.

T-test Data Tables
Structured Survey Responses

Technical	n	%n	N	%N	t	p
Total T & I Responses	1885	91	2075	100	5.42	.001
Technical Responses	190	76	250	100		

Agriculture	n	%n	N	%N	t	p
Total T & I Responses	2232	96	2325	100	5.58	.001
Agriculture Responses	93	74	125	100		

Conservation	n	%n	N	%N	t	p
Total T & I Responses	2280	98	2325	100	1.88	N.S.
Conservation Responses	45	90	50	100		

Horse Handling	n	%n	N	%N	t	p
Total T & I Responses	2256	97	2325	100	1.59	N.S.
Horse Handling Responses	69	92	75	100		

Table II, cont.

T-test Data Tables
Structured Survey Responses

Commercial Printing	n	%n	N	%N	t	p
Total T & I Responses	1498	91	1650	100	1.52	N.S.

Drafting	n	%n	N	%N	t	p
Total T & I Responses	1475	89	1650	100	.42	N.S.
Drafting Responses	157	90	175	100		

Electro Electronics	n	%n	N	%N	t	p
Total T & I Responses	1509	91	1650	100	3.25	.001
Electro Electrical Responses	141	81	175	100		

Maritime	n	%n	N	%N	t	p
Total T & I Responses	1735	99	1775	100	3.36	.001
Maritime Responses	40	88	50	100		

Table II, cont.

T-test Data Tables
Structured Survey Responses

Metalwork Fabrication	n	%n	N	%N	t	p
Total T & I Responses	1675	96	1750	100	1.01	N.S.
Metalwork Responses	70	93	75	100		

Metalwork Machine Tool	n	%n	N	%N	t	p
Total T & I Responses	1675	96	1750	100	2.98	.01
Metalwork Responses	62	83	75	100		

Services	n	%n	N	%N	t	p
Total T & I Responses	1688	96	1756	100	2.82	.01
Services Responses	63	84	75	100		

Special & Misc.	n	%n	N	%N	t	p
Total T & I Responses	1475	95	1550	100	5.76	N.S.
Special & Misc. Responses	223	91	275	100		

APPENDIX E

Table III

T-test Data Tables
Structured Survey Responses
by Performance Category

Special & Miscellaneous	n	%n	N	%N	t	p
Total Special and Misc. Responses	176	64	275	100	5.17	.001
Classroom Management Responses	86	87	99	100		

Special & Misc.	n	%n	N	%N	t	p
Total Special and Misc. Responses	187	68	275	100	3.07	.01
Human Relations Responses	73	83	88	100		

Special & Misc.	n	%n	N	%N	t	p
Total Special and Misc. Responses	242	88	275	100	.86	N.S.
Professional Development Responses	27	82	33	100		

Special & Misc.	n	%n	N	%N	t	p
Total Special and Misc. Responses	220	80	275	100	2.18	.05
Operative Technique Responses	36	65	55	100		

n = number, positive performance category responses
%n = percent, positive performance category responses
N = number, total responses
%N = percent, total responses
t = observed value
p = probability level

Table III, cont.

T-test Data Tables
Structured Survey Responses
by Performance Category

Commercial Art	n	%n	N	%N	t	p
Total Comm. Art Responses	96	64	150	100	3.82	.001
Class Room Management Responses	47	87	54	100		

Commercial Art	n	%n	N	%N	t	p
Total Comm. Art Responses	102	68	150	100	1.57	N.S.
Human Relations Responses	38	79	48	100		

Commercial Art	n	%n	N	%N	t	p
Total Comm. Art Responses	132	88	150	100	.99	N.S.
Professional Development Responses	14	78	18	100		

Commercial Art	n	%n	N	%N	t	p
Total Commercial Art Responses	120	80	150	100	.80	N.S.
Operative Techniques Responses	22	73	30	100		

Table III, cont.

T-test Data Tables
Structured Survey Responses
by Performance Category

Technical	n	%n	N	%N	t	p
Total Technical Responses	160	64	250	100	2.11	.05
Classroom Management Responses	70	78	90	100		

Technical	n	%n	N	%N	t	p
Total Technical Responses	170	68	250	100	2.03	.05
Human Relations Responses	63	79	80	100		

Technical	n	%n	N	%N	t	p
Total Technical Responses	220	88	250	100	1.79	N.S.
Professional Development Responses	22	73	30	100		

Technical	n	%n	N	%N	t	p
Total Technical Responses	200	80	250	100	1.44	N.S.
Operative Technique Responses	35	70	50	100		

Table III, cont.

T-test Data Tables
Structured Survey Responses
by Performance Category

Maritime	n	%n	N	%N	t	p
Total Maritime Responses	32	64	50	100	2.50	N.S.
Classroom Management Responses	16	89	18	100		

Maritime	n	%n	N	%N	t	p
Total Maritime Responses	34	68	50	100	.48	N.S.
Human Relations Responses	12	75	16	100		

Maritime	n	%n	N	%N	t	p
Total Maritime Responses	44	88	50	100	.31	N.S.
Professional Development Responses	5	83	6	100		

Maritime	n	%n	N	%N	t	p
Total Maritime Responses	40	80	50	100	0	N.S.
Operative Technique Responses	8	80	10	100		

Table III, cont.

T-test Data Tables
Structured Survey Responses
by Performance Category

Electro Electronics	n	%n	N	%N	t	p
Total Electro-Electronics Responses	112	64	175	100	1.68	N.S.
Classroom Management Responses	47	75	63	100		

Electro-Electronics	n	%n	N	%N	t	p
Total Electro-Electronics Responses	68	119	175	00	2.65	.01
Human Relation Responses	84	47	56	100		

Electro-Electronics	n	%n	N	%N	t	p
Total Electro-Electronics Responses	88	154	125	100	.79	N.S.
Professional Development Responses	81	19	21	100		

Electro-Electronics	n	%n	N	%N	t	
Total Electro-Electronics Responses	140	80	175	100	0	N.S.
Operative Technique Responses	28	80	35	100		

Table III, cont.

T-test Data Tables
Structured Survey Responses
by Performance Category

Horse Handling	n	%n	N	%N	t	p
Total Horse Handling Responses	43	64	75	100	2.38	.05
Classroom Management Responses	23	85	27	100		

Horse Handling	n	%n	N	%N	t	p
Total Horse Handling Responses	51	68	75	100	4.17	.001
Human Relations Responses	23	96	24	100		

Horse Handling	n	%n	N	%N	t	p
Total Horse Handling Responses	66	88	75	100	3.20	.01
Professional Development Responses	9	100	9	100		

Horse Handling	n	%n	N	%N	t	p
Total Horse Handling Responses	60	80	75	100	1.61	N.S.
Operative Technique Responses	14	93	15	100		

Table III, cont.

T-test Data Tables
Structured Survey Responses
by Performance Category

Metalwork	n	%n	N	%N	t	p
Total Metalwork Responses	48	64	75	100	3.06	.01
Classroom Management Responses	24	89	27	100		

Metalwork	n	%n	N	%N	t	p
Total Metalwork Responses	51	68	75	100	3.10	.01
Human Relations Responses	22	92	24	100		

Metalwork	n	%n	N	%N	t	p
Total Metalwork Responses	66	66	75	100	1.75	N.S.
Professional Development Responses	8	8	9	100		

Metalwork	n	%n	N	%N	t	p
Total Metalwork Responses	60	60	75	100	.64	N.S.
Operative Technique Responses	12	12	15	100		

Table III, cont.

T-test Data Tables
Structured Survey Responses
by Performance Category

Agriculture	n	%n	N	%N	t	p
Total Agriculture Responses	80	64	125	100	2.18	.05
Classroom Management Responses	36	80	45	100		

Agriculture	n	%n	N	%N	t	p
Total Agriculture Responses	85	68	125	100	3.18	.01
Human Relations Responses	16	40	40	100		

Agriculture	n	%n	N	%N	t	p
Total Agriculture Responses	110	88	125	100	7.01	.001
Professional Development Responses	10	67	15	100		

Agriculture	n	%n	N	%N	t	p
Total Agriculture Responses	100	80	125	100	2.27	.05
Operative Technique Responses	14	56	25	100		

Table III, cont.

T-test Data Tables
Structured Survey Responses
by Performance Category

Conservation	n	%n	N	%N	t	p
Total Conservation Responses	32	64	50	100	2.38	.05
Classroom Management Responses	6	33	18	100		

Conservation	n	%n	N	%N	t	p
Total Conservation Responses	34	68	50	100	4.17	.001
Human Relations Responses	16	100	16	100		

Conservation	n	%n	N	%N	t	p
Total Conservation Responses	44	88	50	100	2.61	.01
Professional Development Responses	6	100	6	100		

Conservation	n	%n	N	%N	t	p
Total Conservation Responses	40	50	50	100	7.07	.001
Operative Technique Responses	9	90	10	100		